

Alfonso Alonso

Smithsonian Conservation Biology Institute

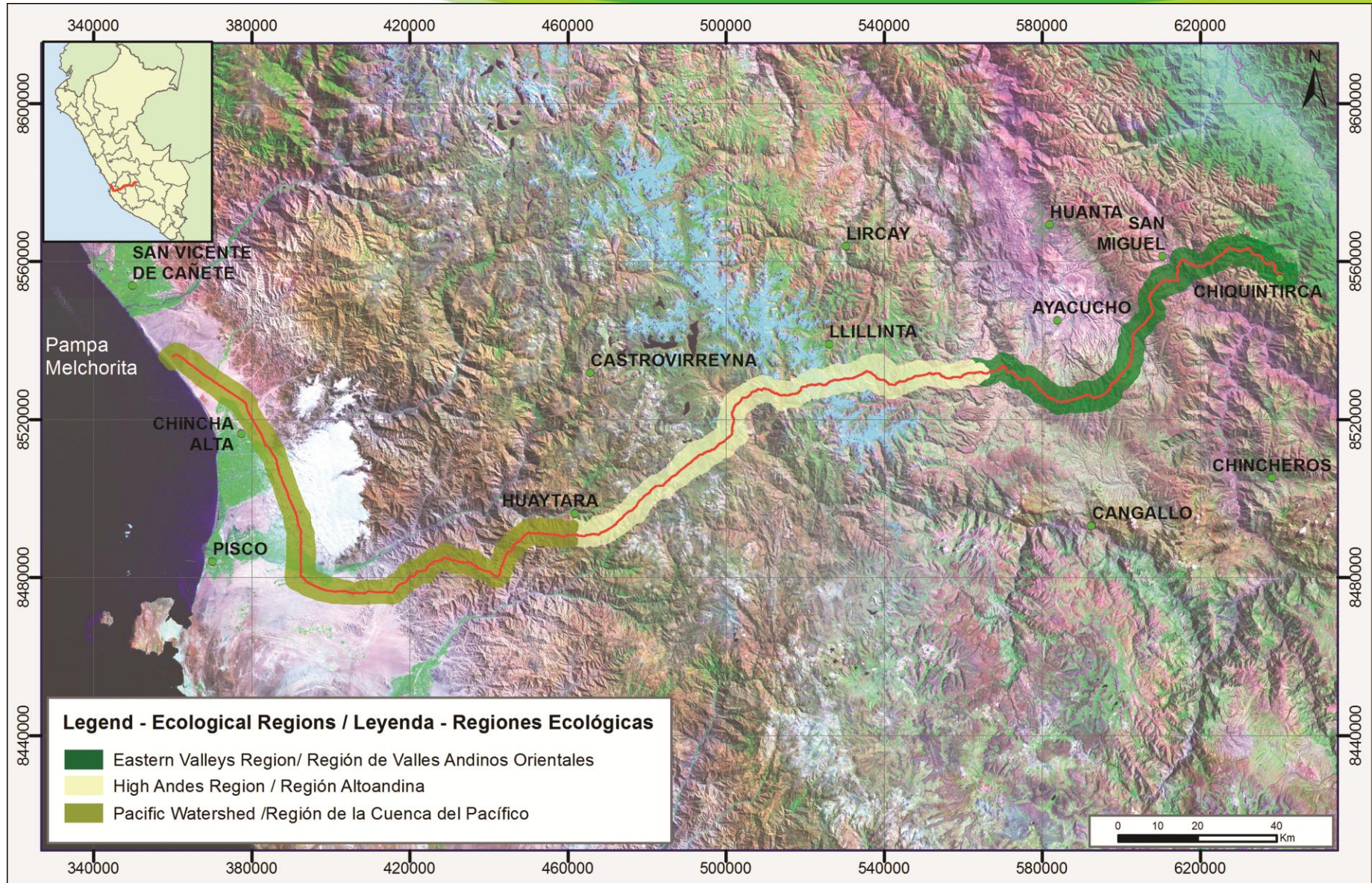
*Integrating Biodiversity Monitoring and Assessment
to a Mega Infrastructure Pipeline Construction
Project in Peru*

alonsoa@si.edu

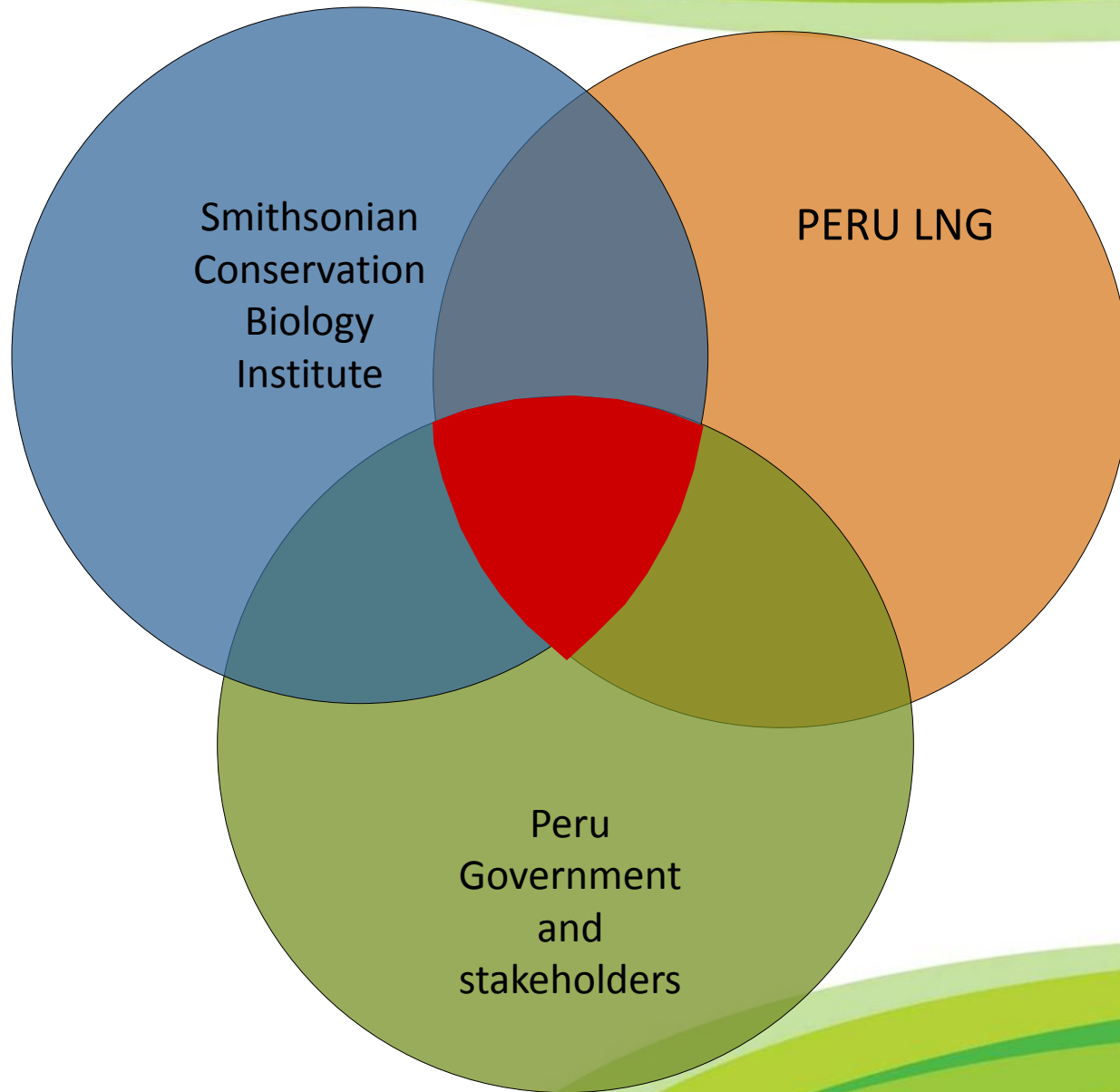
February 7, 2013



PERU LNG Project



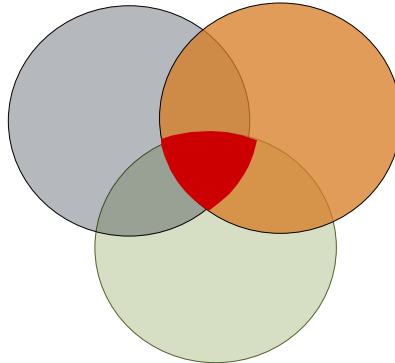
Collaboration



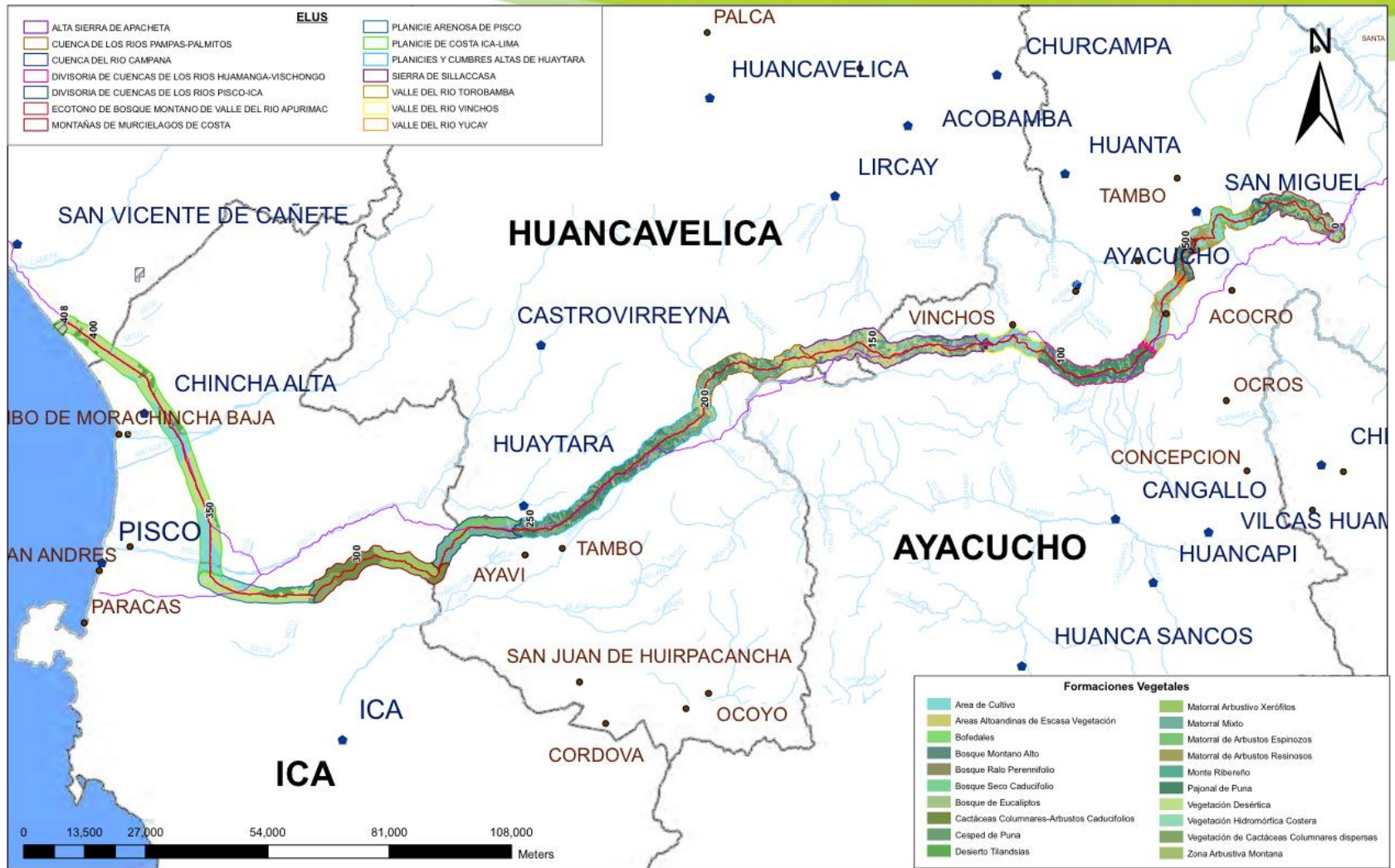


Contribuyendo con la
CONSERVACIÓN
de la biodiversidad

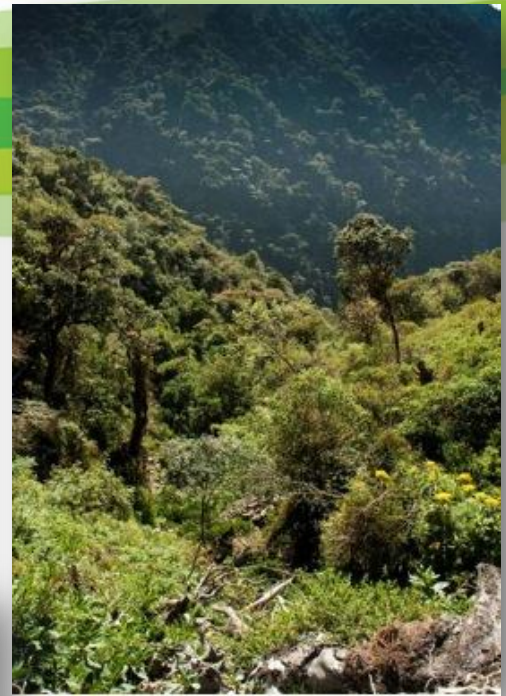
Biodiversity Monitoring and Assessment Program



14 Ecological Landscape Units



Habitats



Species selection



EIA (Evaluación de Impacto Ambiental) Riqueza de especies

- Plantas 673 spp. (potencial)
- Peces 9 spp.
- Anfibios 8 spp.
- Reptiles 16 spp.
- Aves 307 spp.
- Mamíferos 45 spp.

>1000 spp



EFS (Ecological Field Survey) Sensitividad Especies

- Plantas 111 spp.
- Peces 7 spp.
- Anfibios 7 spp.
- Reptiles 19 spp.
- Aves 97 spp.
- Mamíferos 34 spp.

>270 spp



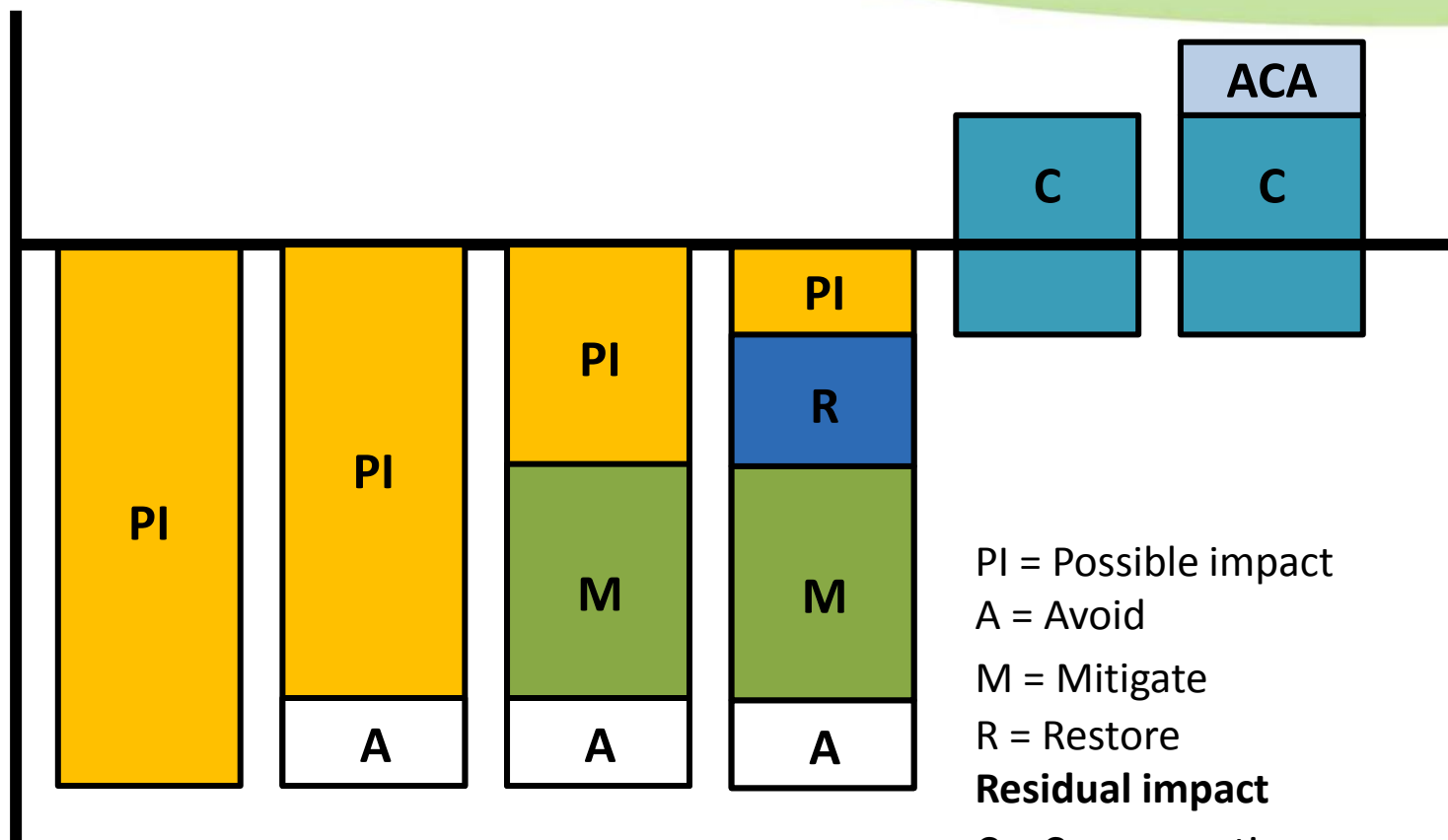
BMAP Especies Prioritarias

- Plantas 9 spp.
- Peces 3 spp.
- Anfibios 3 spp.
- Reptiles 3 spp.
- Aves 7 spp.
- Mamíferos 4 spp.

29 spp

Mitigation hierarchy

Positive impact on biodiversity



PI = Possible impact

A = Avoid

M = Mitigate

R = Restore

Residual impact

C = Compensation

ACA = Additional Conservation Actions

Negative impact on biodiversity

Avoid

- Affecting water quality in rivers, streams, wetlands



PI

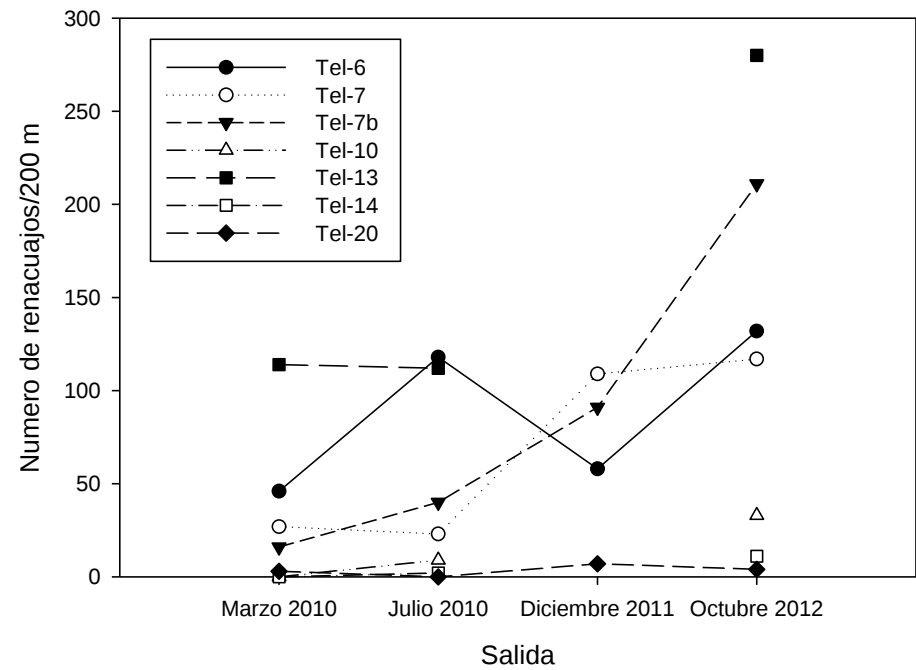
A

Avoid

- Tadpole population trends last 3 years

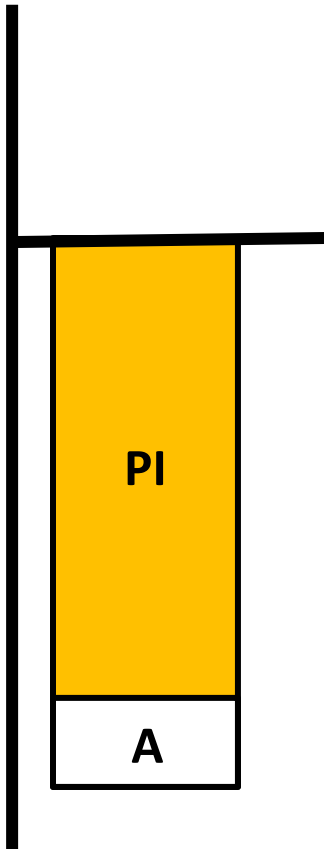
PI

A

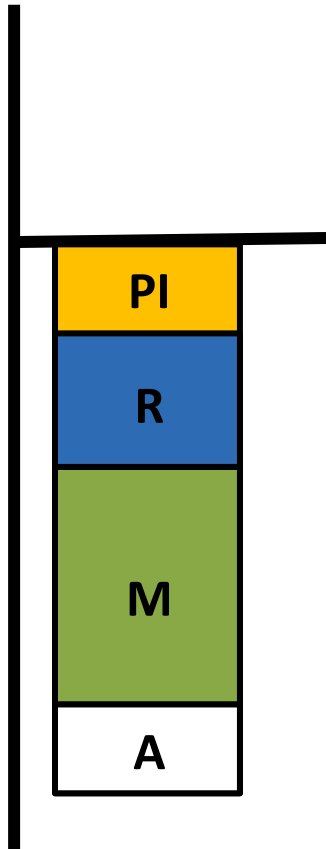


Avoid

- No significant differences between ROW and nearby unaffected areas



Mitigate-Restore

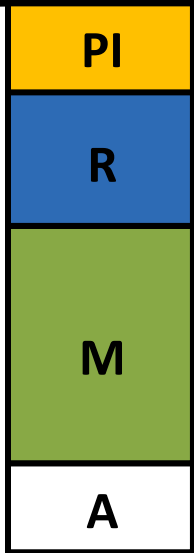


- Biorrestauración del DdV



Mitigate-Restore

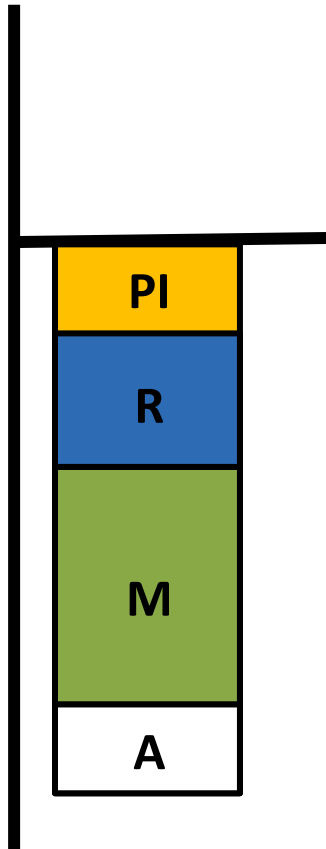
- Bio restoration of the ROW



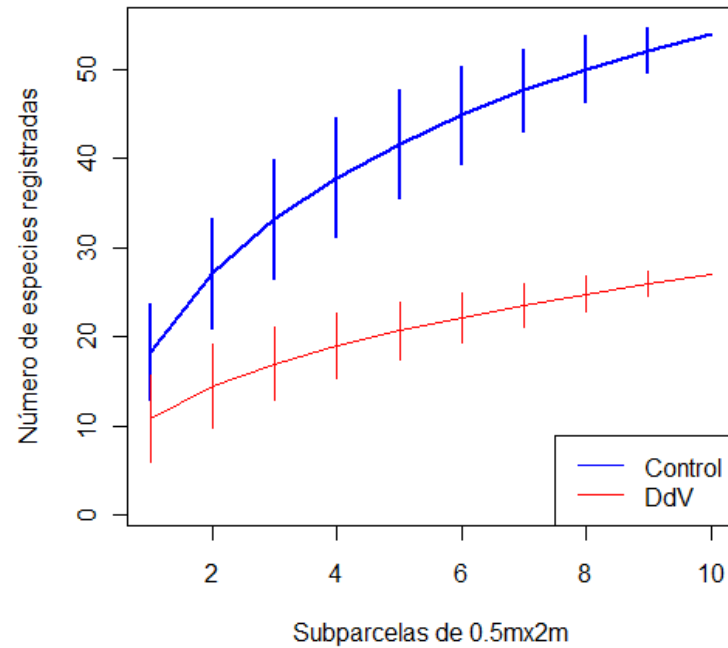
kp 76



Mitigate-Restore

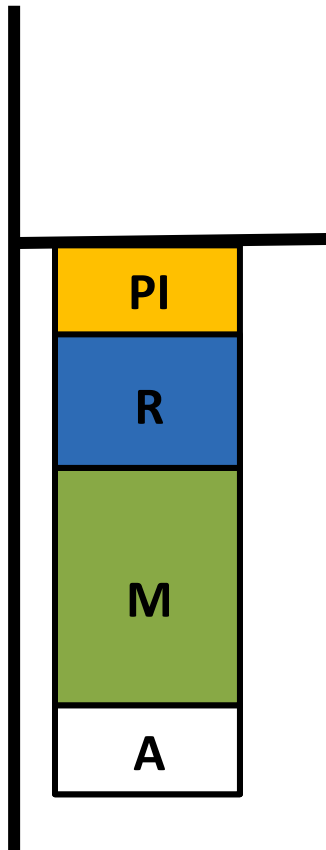


Curvas de acumulación de especies KP76

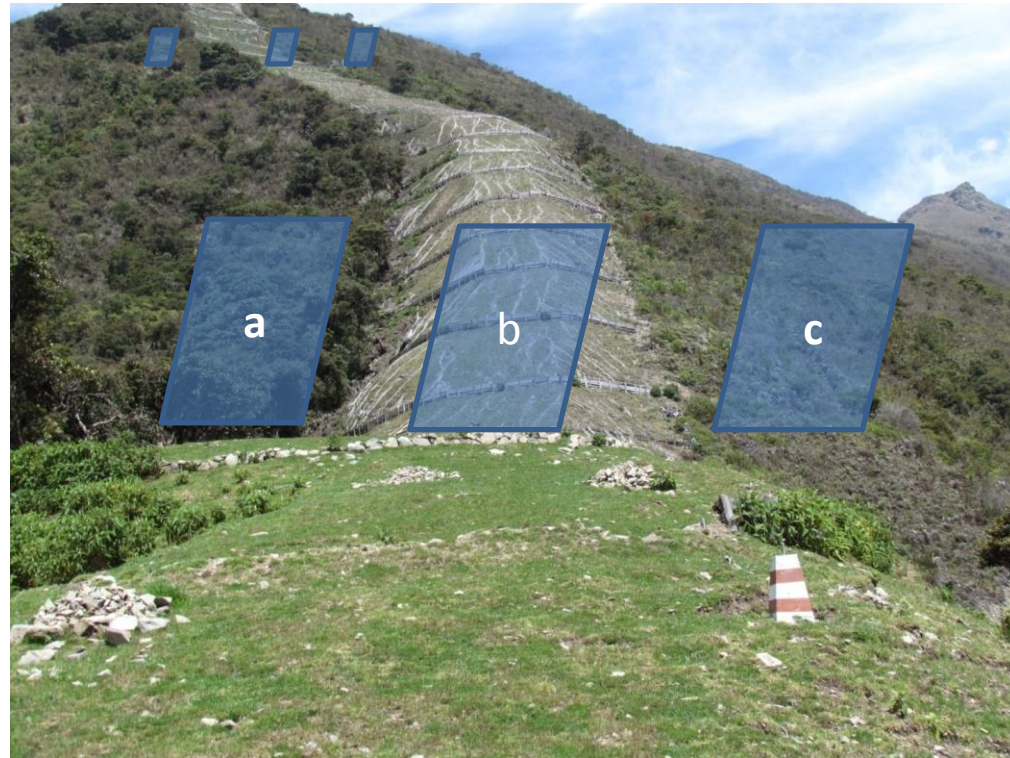


Linares et al., 2013

Mitigate-Restore

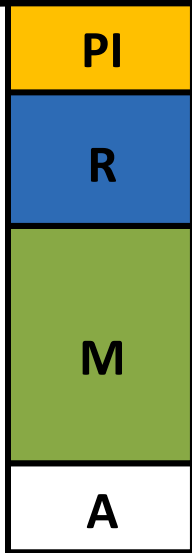


- Restore ROW montane forest

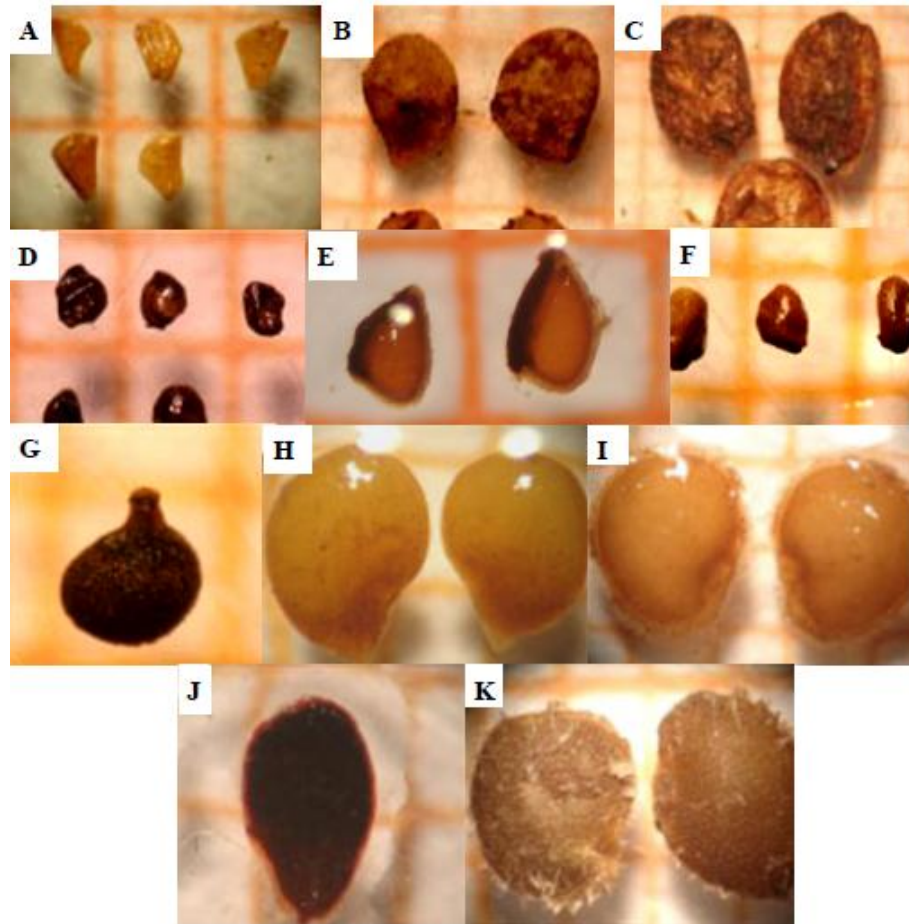
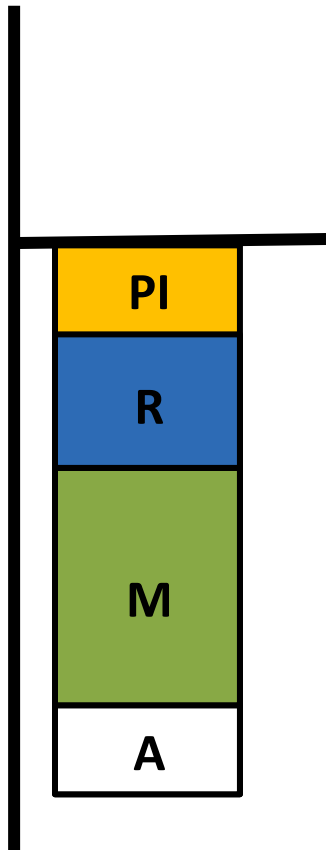


Mitigate-Restore

- Rodent community in montane forest



Mitigate-Restore

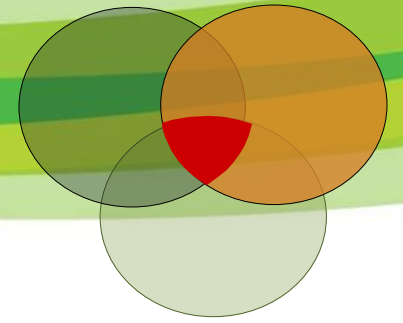


Mitigate-Restore

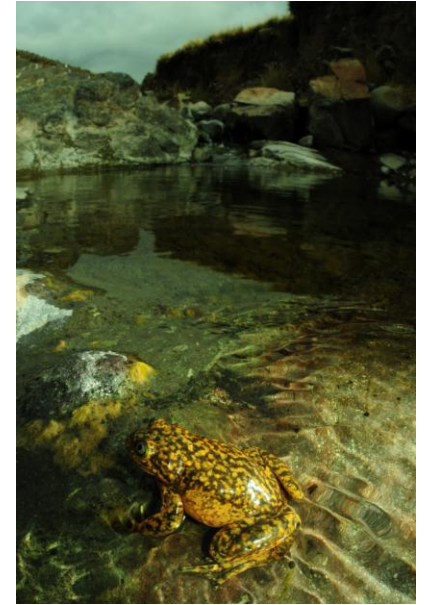
- Viability of seeds eaten by rodents

Especie de roedores		<i>A. torques</i>		<i>C. sorellus</i>		<i>M. minutus</i>		<i>O. andinus</i>	<i>T. oreas</i>		<i>T. kalinowskii</i>	
Número de muestras		n=45	n=76	n=22	n=4	n=4	n=5	n=7	n=11	n=16	n=17	n=17
Morfoespecies		EH	ES	EH	ES	EH	ES	EH	EH	ES	EH	ES
Familia	Género											
Annonaceae	<i>Guatteria sp.1</i>	-			-	-	-	-	-	-	80,00	-
Brassicaceae 1	-	-			-	-	-	-	-	-	20,00	-
Bromeliaceae	<i>Greigia sp.1</i>	-			-	-	-	-	-	-	79,12	100,00
	<i>Gaultheria sp.1</i>	22,67	20,41	53,00	40,00	20,00	0,00	15,38	10,00	16,67	30,00	31,75
Ericaceae	<i>Gaultheria sp.2</i>	18,18	40,00	25,00	-	-	-	-	-	10,00	40,00	23,33
	<i>Demosthenesia sp.1</i>				-	-	-	-	-	-	-	-
Myrtaceae	<i>Myrteola sp.1</i>	33,33			-	-	-	-	-	-	0,00	
Melastomataceae	<i>Miconia sp.1</i>	1,56	6,45		-	-	-	-	-	13,33	36,67	20,88
	<i>Miconia sp.2</i>				-	-	-	-	-	10,00	-	0,00
Polygonaceae 1	-				-	-	-	-		-	-	100,00
Rosaceae	<i>Rubus sp.1</i>	0,00			-	-	-	-		-	55,00	-
Rubiaceae 1	-				-	-	-	-	0,00	-	-	
Rubiaceae 2	-				-	-	-	-	-	-	-	100,00
Solanaceae 2	-				-	-	-	-	0,00	-	-	
Solanaceae 4	-				-	-	-	-	0,00	-	0,00	60,00

Conclusions



- BMAP provides information on population trends of selected species and habitats that aids company managers to assess their environmental practices
 - Water quality: tadpoles and adults
 - Recolonization of ROW: native species
 - Rodents: disperse seeds of native species



Thank you for your attention

alonsoa@si.edu

Equipo BMAP

Francisco Dallmeier

Alfonso Alonso

Catherine Sahley

Karim Ledesma

Ornella Sissa

Pablo Taborga

Carolina Casaretto

Bruno Vildoso

Silvana Camacho